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#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <sys/socket.h>
#include <unistd.h>
#include <arpa/inet.h>

typedef struct packet{
    char data[1024];
}Packet;

typedef struct frame{
    int frame_kind; //ACK:0, SEQ:1 FIN:2
    int sq_no;
    int ack;
    Packet packet;
}Frame;

int main(int argc, char** argv){

    if (argc != 2){
        printf("Usage: %s <port>", argv[0]);
        exit(0);
    }

    int port = atoi(argv[1]);
    int sockfd;
    struct sockaddr_in serverAddr, newAddr;
    char buffer[1024];
    socklen_t addr_size;

    int frame_id=0;
    Frame frame_recv;
    Frame frame_send;

    sockfd = socket(AF_INET, SOCK_DGRAM, 0);

    memset(&serverAddr, '\0', sizeof(serverAddr));
    serverAddr.sin_family = AF_INET;
    serverAddr.sin_port = htons(port);
    serverAddr.sin_addr.s_addr = inet_addr("127.0.0.1");

    bind(sockfd, (struct sockaddr*)&serverAddr, sizeof(serverAddr));
    addr_size = sizeof(newAddr);

    while(1){
        int f_recv_size = recvfrom(sockfd, &frame_recv, sizeof(Frame), 0,
        (struct sockaddr*)&newAddr, &addr_size);
        if (f_recv_size > 0 && frame_recv.frame_kind == 1 &&
frame_recv.sq_no == frame_id){
            printf("[+]Frame Received: %s\n", frame_recv.packet.data);

            frame_send.sq_no = 0;
            frame_send.frame_kind = 0;
            frame_send.ack = frame_recv.sq_no + 1;
            sendto(sockfd, &frame_send, sizeof(frame_send), 0, (struct
sockaddr*)&newAddr, addr_size);
            printf("[+]Ack Send\n");
        }else{
            printf("[+]Frame Not Received\n");
        }
    }
}

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        }  
        frame_id++;  
    }  
  
    close(sockfd);  
    return 0;  
}
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